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I so declare under penalty of perjury under the laws of the State of Washington on this day, April 12, 2006.

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Description in support of the patent application for an industrial patent entitled: “PROPULSION SYSTEM FOR DIVERS, ADVANTAGEOUSLY SUPPLIED BY A SERIES OF RECHARGEABLE BATTERIES INSERTED INSIDE SPECIAL WATERTIGHT CONTAINERS JOINED TOGETHER” in the name of OSVALDO VALENTE, born on 12/12/1957 in Taviano (LE) and residing at via Carpena 2, 19022 Porto Venere – Frazione le Grazie (SP).

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### DESCRIPTION

The invention covers an innovative means of electric propulsion, validly supported by a special harness that can be used by scuba divers, deep-sea divers or simple amateurs, the entire apparatus advantageously powered by a sophisticated system of rechargeable batteries inserted inside various water tight containers joined together by means of interstices of rubber or other suitable technical material. As we know, the greatest difficulty faced by anyone working underwater is moving around. This difficulty, in certain particular conditions, increases exponentially, very severely testing the resistance even of the most qualified persons who, even if adequately prepared, can incur serious risks that can endanger their safety. The innovative structure will allow all amateurs or other specialized operators to move underwater without any problem, even if they are submerged in deep water for long periods of time. Another very important characteristic of the system is its reduced size, which will make it possible to move and work in complete freedom and under any conditions. For the purposes of this patent application, there is no need to describe the various types of underwater propulsion currently in use, in that their operation is known to all technicians in the sector and constitute a known art, yet do not allow for a solution to the problem involved. The principal scope of this invention is to eliminate the disadvantages mentioned above and provide all amateur and professional divers with a valid propulsion system that is technologically advanced and safe to use, capable of facilitating normal movements even under extreme conditions such as prolonged underwater stays or great depths. According to the invention, this result has been attained by adopting the

technical solution of using a system with the characteristics described in the independent claims. Other characteristics of this invention are covered by the dependent claims.

The advantages of this invention consist essentially of the fact that all scuba divers, deep-sea divers or simple amateurs, can validly use the system covered by the patent in order to move around in total safety while they are submerged, having at their disposal a device of small dimensions but very efficient and versatile. These and other advantages and characteristics of this invention will be better and more fully understood by every technician in the field from the following description and with the help of the attached drawings, given as exemplified embodiments of the invention, but not to be considered as limiting, in which:

- Table 1 shows a part of the special propulsion system showing the special harness (2) complete with the two hooks (3, 4) for tying it around the hips of the user and reinforced holes (5, 5B, 5C, 5D, 5E, 5F, 5G) that can hold various accessories such as the two special water jets (1, 1B) or other objects useful for diving. It is necessary to point out that the locking system, shown in the figure with the reinforced holes (5, 5B, 5C, 5D, 5E, 5F, 5G) where the relative bolts are inserted, is given by way of example only, since any number of other systems normally employed can be advantageously used without compromising correct operation.
- Table 2, on the other hand, shows the complete propulsion system with all the accessories that comprise it and regularly worn by the user, with the following in sequence: the two small-sized water jets (1C, 1D) ; the harness (2B), correctly applied showing the reinforced holes (5H, 5I, 5L) still free and ready to be advantageously used; the power supply system (6) consisting of various watertight containers containing traditional or rechargeable batteries, joined together by means of interstices made of rubber or other suitable material, described in detail in the following drawing tables; the manual control consisting of a watertight switch (7) positioned in the palm of the hand inside the diving suit (7), able to turn on/turn off the various electrical devices ON or OFF.
- Table 3 again shows the complete propulsion system with all the accessories of which it is comprised and regularly worn by the user, with the two lateral small-sized water jets (not visible in the figure), validly replaced by one of larger dimensions (1E) centrally positioned. This solution may be adopted in the event that, for space reasons, other

specific configurations are not recommended. This table also shows in sequence: the harness (2C) correctly applied showing the reinforced holes (5M, 5N, 5O, 5P) ready to be advantageously used; the power supply system (6B) consisting of various watertight containers containing traditional or rechargeable batteries joined together by means of interstices made of rubber or other suitable material (described in detail in the following drawing tables); the manual control consisting of a watertight switch (7B) positioned in the palm of the hand inside the diving suit, to turn the different electric/electronic equipment ON or OFF.

- Table 4 some aspects of the propulsion system in detail. Fig. 4 shows a variant applicable to the push button (7C), which in this case is equipped with a strap (8) that can attach it firmly to the palm of the hand, to be used mainly when the diver is not wearing a diving suit. Fig. 5, on the other hand, presents the power supply system (6C) consisting of various watertight containers all containing traditional or rechargeable batteries joined together by means of interstices made of rubber or other suitable material, where three more small watertight containers (9, 9B, 9C), also containing a traditional or rechargeable battery, have been applied thanks to the special recesses described in detail in the following tables. This addition, when space permits, serves to strengthen and increase the autonomy of the system. Fig. 6, on the other hand, shows the small water jet (1F) complete with the electric wires with which it is fitted. Fig. 7, finally, shows a watertight branch box (10) in which the various wires of the power supply and control circuit are attached, complete with the relative intake holes (11, 11B, 11V, 11D, 11E, 11F) all equipped with the respective rubber stoppers that prevent the water from filtering in. At the top can be seen the cover (12) before it is applied and the rubber sealing ring (13).
- Table 5 shows in detail the complete power supply system complete with all the parts that comprise it, in the following sequence: the small caps (14, 14B, 14C) to be inserted under pressure on the watertight containers (9D, 9E, 9F, 9G, 9H, 9I, 9L) all advantageously equipped with sealing rings (15, 15B, 15C); the connecting cables (16, 16B, 16C, 16D, 16E, 16F, 16G, 16H, 16I); the two hooks (17, 18); the connecting interstices of rubber or other suitable material (19, 19B, 19C, 19D, 19E, 19F, 19G, 19H); the two “V”-section hooks (20, 20B) (optional); the traditional batteries (use and discard) or rechargeable (21, 21B, 21C).

- Table 6 shows a series of details of the special power supply system. Fig. 9 shows in detail a watertight container (9M) inside of which the relative traditional or rechargeable batteries are positioned in the following sequence: the cover (14D) to be inserted under pressure on the container (9M); the sealing ring (15D) made of rubber or other suitable technical material; the two watertight connecting holes (22, 22B); the two polarity symbols (23, 23B) used for assembling; the connecting cable (24) with the corresponding sealing plug (25) of rubber or other suitable technical material; the two guides (26, 26B) used to hook on the relative connecting interstices (19I) made of rubber or other suitable technical material. Fig. 10 shows a connecting interstice (19L) of rubber or other suitable technical material to which is assembled a special block (20C) with a “V” section (optional) capable of fastening additional accessories. Fig. 11 shows in detail the individual staggered sections (27, 27B) located in the lower part of all the watertight containers (9N, 9O). These sections are used when the watertight containers (9N, 9O) are to be fastened together to form different configurations of the power supply device.

Fig. 12 shows in a top view the lower part of a watertight container (9P) where the staggered sections can be seen (27C); the two guides (26C, 26D); the two connecting interstices (19M, 19N) are of rubber or other suitable technical material, one of which (19N) is inserted correctly and the other (19M) is outside its seat.

Reduced to its essential structure and with reference to the figures in the attached drawings, an innovative means of propulsion, validly supported by a special harness that can be used by scuba divers, deep-sea divers or simple amateurs, all of it advantageously powered by a sophisticated system of traditional or rechargeable batteries inserted inside various watertight containers joined together by means of interstices of rubber or other suitable technical material, according to the invention, includes:

- means for moving around underwater thanks to small electric water jets (1, 1B, 1C, 1E, 1F) validly supported by a harness (2, 2B, 2C) that hooks around the hips of the user and is powered by a system including a series of watertight cylinders (9, 9B, 9C, 9D, 9E, 9F, 9G, 9H, 9I, 9L, 9M, 9N, 9O, 9P) all containing a traditional or rechargeable battery/accumulator (21, 21B, 21C);

- means for establishing any type of configuration of the innovative power supply system (6, 6B, 6C), thanks to the connecting interstices (19, 19B, 19C, 19D, 19E, 19F, 19G, 19H, 19I, 19L, 19M, 19N) of rubber or other suitable technical material, and a series of special staggered recesses (26, 26B, 26C, 26D, 27, 17B, 27C) located at the base of the watertight cylinders (9, 9B, 9C, 9D, 9E, 9F, 9G, 9H, 9I, 9L, 9M, 9N, 9O, 9P);
- means for connecting the various cables of the power supply and control circuit inside a special watertight branch box (10), complete with the relative intake holes (11, 11B, 11C, 11D, 11E, 11F) advantageously equipped with the corresponding rubber stoppers (25) to prevent water from infiltrating inside;
- means for controlling the entire system thanks to watertight push buttons (7, 7B) that could be combined with a strap (8) that can hold the buttons firmly in the palm of the hand, to be used when the diver, for various reasons, is not wearing a diving suit;
- means for attaching to the special harness (2, 2B, 2C) various types of accessories, thanks to reinforced holes (5, 5B, 5C, 5D, 5E, 5F, 5G, 5H, 5I, 5L, 5M, 5N, 5O, 5P) equipped with the corresponding supplementary bolts;
- means for equipping the connecting interstices (19, 19B, 19C, 19D, 19E, 19F, 19G, 19H, 19I, 19L, 19M, 19N) of rubber or other suitable technical material, with a special block (20, 20B, 20C) with a “V” section capable of attaching possible additional accessories.

Advantageously, the special propulsion system can be readily configured in various solutions to allow all scuba divers, deep-sea divers, or amateurs to use it for work or for simple recreation.

Advantageously, the special harness (2, 2B, 2C) is able to clamp on various types of accessories such as small water jets (1, 1B, 1C, 1D, 1E, 1F) thanks to reinforced holes (5, 5B, 5C, 5D, 5E, 5F, 5G, 5H, 5I, 5L, 5M, 5N, 5O, 5P) combined with the relative bolts or using other clamping systems, without adversely affecting its proper operation.

Advantageously, the special propulsion system may be equipped with watertight push buttons (7, 7B) to make it possible to control with one hand the activation/deactivation of the entire system.

Advantageously, the battery accessory (6, 6B, 6C) can be used to power the entire system covered by the patent or for other similar purposes, all thanks to the versatility of the construction design.

Advantageously, the system covered by the patent has some special technical features capable of preventing water from infiltrating the electrical and electronic systems and irremediably compromising proper operation.

Advantageously, the special propulsion system may be constructed using the most disparate materials on the market today. It will, as a matter of fact, be possible to use common plastic materials, aluminum, fiberglass, carbon, all composite alloys, and even to use different metals such as iron, steel, brass and all their derivatives.

In any event, the execution details can vary in practice in an equivalent manner with regard to form, dimensions, layout of the elements, nature of the materials used, without departing from the context of the solution idea and therefore remaining within the boundaries of the protection granted by this industrial invention patent.